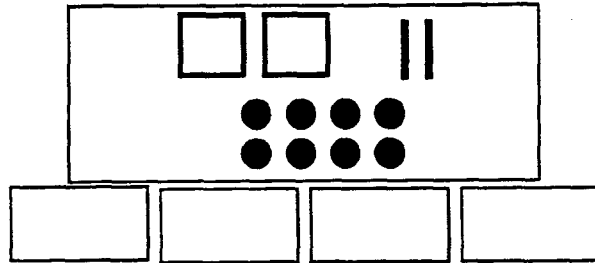


Division Computation III

Transparency

①

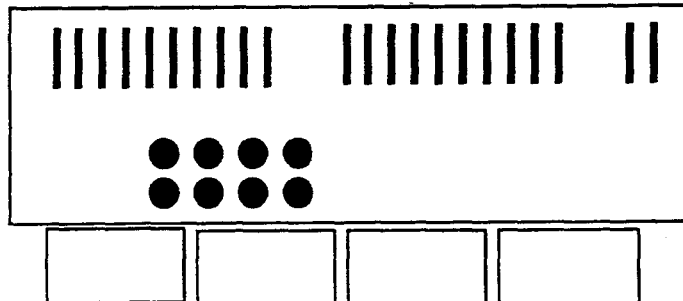
$$4 \overline{) 228}$$



②

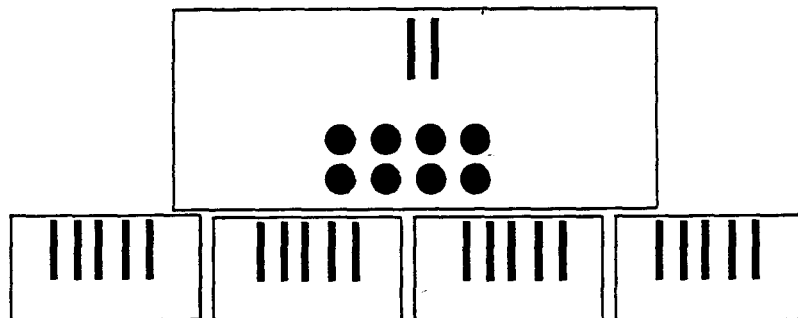
Hundreds Tens Ones

4	2	2
8		



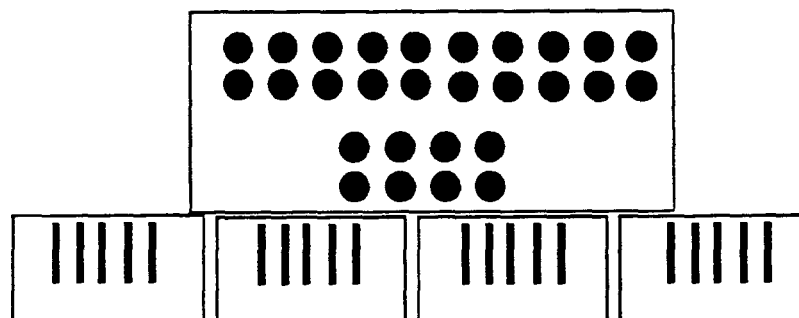
③

4	2	2
8		



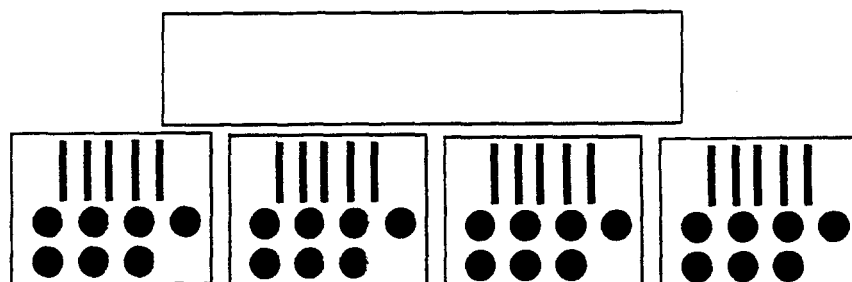
④

4	2	2
8		
2		



⑤

4	2	2
8		
2		



DIVISION COMPUTATION

Divide

the largest place value first.

Think: Put an equal number of tens into each group. There are 5 tens and 4 groups.

<u>Tens</u>	<u>Ones</u>
1	8
4	5

Multiply

(number of groups by number in each group) to find how many were used.

Think: I put 1 ten in each of the 4 groups.
 $4 \times 1 = 4$ tens used.

<u>Tens</u>	<u>Ones</u>
1	8
4	5
4	8

Subtract

to find how many are left.

Think: I had 5 tens.
 I used 4 tens.
 $5 - 4 = 1$ ten left.

<u>Tens</u>	<u>Ones</u>
1	8
4	5
-	4
1	8

Bring down

the ones and regroup.

Think: I have 8 ones.
 The ten makes 10 ones.
 I have a total of 18 ones.

<u>Tens</u>	<u>Ones</u>
1	8
4	5
-	4
1	8

Divide

the next place value.

Think: Put an equal number of ones in each group. There are 18 ones and 4 groups.

Tens Ones

$$\begin{array}{r} 1 \overline{)4} \\ 4 \overline{)58} \\ - 4 \\ \hline 18 \end{array}$$

Multiply

(number of groups by number in each group) to see how many used.

Think: I put 4 ones in each of the 4 groups.
 $4 \times 4 = 16$ ones used.

Tens Ones

$$\begin{array}{r} 1 \overline{)4} \\ 4 \overline{)58} \\ - 4 \\ \hline 18 \\ 16 \\ \hline \end{array}$$

Subtract

to find how many are left.

Think: I had 18 ones.
I used 16 ones.
 $18 - 16 = 2$ ones left.

Tens Ones

$$\begin{array}{r} 1 \overline{)4} \\ 4 \overline{)58} \\ - 4 \\ \hline 18 \\ - 16 \\ \hline 2 \end{array}$$

Think: There is no number left to **bring down**. The number left is the remainder.

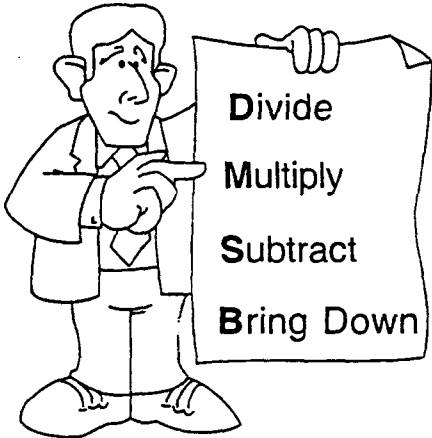
Tens Ones

$$\begin{array}{r} 1 \overline{)4} \text{ R } 2 \\ 4 \overline{)58} \\ - 4 \\ \hline 18 \\ - 16 \\ \hline 2 \end{array}$$

Write remainder in quotient.

Name _____

Division Delight



Divide
Multiply
Subtract
Bring Down

EXAMPLE

$$\begin{array}{r} 15 \text{ R } 1 \\ 3 \overline{) 46} \\ \underline{- 3} \\ 16 \\ \underline{- 15} \\ 1 \end{array}$$

Estimate $\rightarrow 3 \overline{) 30}$

Estimate, then solve.

1) $\begin{array}{r} 2 \overline{) 47} \\ \underline{} \\ \end{array}$ Estimate \rightarrow $\begin{array}{|l} \hline \\ \hline \end{array}$

2) $\begin{array}{r} 7 \overline{) 95} \\ \underline{} \\ \end{array}$ Estimate \rightarrow $\begin{array}{|l} \hline \\ \hline \end{array}$

3) $\begin{array}{r} 3 \overline{) 87} \\ \underline{} \\ \end{array}$ Estimate \rightarrow $\begin{array}{|l} \hline \\ \hline \end{array}$

4) $\begin{array}{r} 9 \overline{) 78} \\ \underline{} \\ \end{array}$ Estimate \rightarrow $\begin{array}{|l} \hline \\ \hline \end{array}$

5)
$$\begin{array}{r} \\ 5 \overline{) 673} \end{array} \rightarrow \begin{array}{c} \text{Estimate} \\ \hline \end{array}$$

6)
$$\begin{array}{r} \\ 4 \overline{) 756} \end{array} \rightarrow \begin{array}{c} \text{Estimate} \\ \hline \end{array}$$

7)
$$\begin{array}{r} \\ 6 \overline{) 435} \end{array} \rightarrow \begin{array}{c} \text{Estimate} \\ \hline \end{array}$$

8)
$$\begin{array}{r} \\ 7 \overline{) 543} \end{array} \rightarrow \begin{array}{c} \text{Estimate} \\ \hline \end{array}$$

9)
$$\begin{array}{r} \\ 8 \overline{) 517} \end{array} \rightarrow \begin{array}{c} \text{Estimate} \\ \hline \end{array}$$

10)
$$\begin{array}{r} \\ 5 \overline{) 474} \end{array} \rightarrow \begin{array}{c} \text{Estimate} \\ \hline \end{array}$$

How to Check

$$16 \div 8 = 2$$

$$2 \times 8 = 16$$

$$24 \div 4 = 6$$

$$4 \times 6 = 24$$

$$18 \div 6 = 3$$

$$3 \times 6 = 18$$

$$36 \div 4 = 9$$

$$9 \times 4 = 36$$

$$48 \div 6 = 8$$

$$8 \times 6 = 48$$

$$5 \overline{)17}$$

$$6 \overline{)68}$$

$$6 \overline{)354}$$

How to Check Division

$$\begin{array}{r} 17 \\ 4 \overline{) 68} \\ \underline{-4} \\ 28 \\ \underline{-28} \\ 0 \end{array}$$

$$\begin{array}{c} \nearrow \\ 17 \end{array} \times \begin{array}{c} \uparrow \\ 4 \end{array} = \begin{array}{c} \nwarrow \\ 68 \end{array}$$

Quotient \times Divisor = Dividend

$$\begin{array}{r} 78 \text{ R } 1 \\ 8 \overline{) 625} \\ \underline{-56} \\ 65 \\ \underline{-64} \\ 1 \end{array}$$

$$\begin{array}{c} \uparrow \\ 78 \end{array} \times \begin{array}{c} \uparrow \\ 8 \end{array} + \begin{array}{c} \uparrow \\ 1 \end{array} = \begin{array}{c} \uparrow \\ 625 \end{array}$$

Quotient \times Divisor + Remainder = Dividend

Name _____

ESTIMATE! DIVIDE ! CHECK!

Estimate $\frac{60}{7 \overline{)420}}$

Divide

$$\begin{array}{r} 61 \text{ R } 5 \\ 7 \overline{)432} \\ \underline{-42} \\ 12 \\ \underline{-7} \\ 5 \end{array}$$

Check

$$\begin{array}{r} 61 \\ \times 7 \\ \hline 427 \\ + 5 \\ \hline 432 \end{array}$$

Estimate by using basic facts.

Divide, multiply, subtract and bring down.

Check your answer by multiplying the quotient by the divisor and adding the remainder.



Estimate, then solve. Check your answer.

1)

$$\begin{array}{r} 6 \overline{)354} \\ \hline \end{array}$$

Estimate

Check

2)

$$\begin{array}{r|l} 4 & 936 \\ \hline \end{array}$$

Estimate

Check

3)

$$\begin{array}{r|l} 7 & 613 \\ \hline \end{array}$$

Estimate

Check

4)

$$\begin{array}{r|l} 5 & 325 \\ \hline \end{array}$$

Estimate

Check

5)

$$\begin{array}{r|l} 8 & 95 \\ \hline \end{array}$$

Estimate

Check

6)

$$\begin{array}{r|l} 2 & 475 \\ \hline \end{array}$$

Estimate

Check

7)

$$\begin{array}{r|l} 6 & 59 \\ \hline \end{array}$$

Estimate

Check

8)

$$\begin{array}{r|l} 3 & 84 \\ \hline \end{array}$$

Estimate

Check

9)

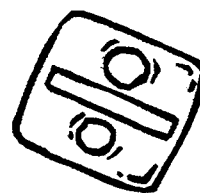
$$\begin{array}{r|l} 9 & 751 \\ \hline \end{array}$$

Estimate

Check

Name _____

Let's Divide



Estimate and solve each division problem.

1) $5 \overline{) 528}$ \longrightarrow \square

2) $7 \overline{) 502}$ \longrightarrow \square

3) $8 \overline{) 746}$ \longrightarrow \square

4) $6 \overline{) 333}$ \longrightarrow \square

5) $9 \overline{) 938}$ \longrightarrow \square

6) $7 \overline{) 798}$ \longrightarrow \square

- 7) Kina picked 72 flowers. She wanted to put them equally into 9 vases. How many flowers are in each vase?



- 8) Juan cut out 114 pictures of computers. He put the pictures into 8 equal piles. How many pictures were in each pile? How many pictures were left over?



- 9) Gabriel wants to put his collection of baseball cards in a new album. He has 248 cards. Each page of the album holds 8 cards. How many pages will he need?



- 10) A total of 48 students are going to a concert. If each car holds 6 students, how many cars will be needed to take everyone to the concert?



- 11) On Saturday and Sunday, a total of 414 people went to see the school play. If the same number went on each day, how many people went to the play on Saturday?



Name _____

Digit Detective



Find the missing digits.

1)

$$\begin{array}{r} 5 \\ 7 \overline{) 378} \\ \underline{- 3} \\ 2 \\ \underline{- 2} \\ \end{array}$$

2)

$$\begin{array}{r} 2 \\ 8 \overline{) 576} \\ \underline{- 56} \\ \\ \underline{- 6} \\ \end{array}$$

3)

$$\begin{array}{r} 67 \\ \overline{) 335} \\ \underline{- 3} \\ 5 \\ \underline{- 35} \\ \end{array}$$

4)

$$\begin{array}{r} 6 \text{ R } \\ 6 \overline{) 409} \\ \underline{- 6} \\ 9 \\ \underline{- 0} \\ \end{array}$$

5)

$$\begin{array}{r} 8 \text{ R } \\ 9 \overline{) 616} \\ \underline{- 54} \\ \\ \underline{- 7} \\ 4 \end{array}$$

6)

$$\begin{array}{r} 23 \\ 8 \overline{) 984} \\ \underline{- 8} \\ 8 \\ \underline{- 1} \\ 2 \\ \underline{- } \\ \end{array}$$

7)

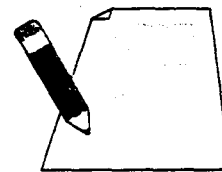
$$\begin{array}{r} 1 \\ 3 \overline{) 903} \\ \underline{- 9} \\ 0 \\ \underline{- } \\ 3 \\ \underline{- } \\ \end{array}$$

8)

$$\begin{array}{r} 14 \\ 4 \overline{) 572} \\ \underline{- } \\ \\ \underline{- 1} \\ 6 \\ \underline{- } \\ 1 \\ \underline{- 1} \\ \end{array}$$

Name _____

Let's Write



1. Write a word problem using $64 \div 8 = 8$.

2. Write a word problem using $125 \div 4 = 31 \text{ R } 1$.

Answer Key **Mult. and Div. - Obj. 14**





Estimation Practice/Division

- | | | | |
|--|--|---|--|
| 1) $5 \overline{) 150} \begin{smallmatrix} 30 \end{smallmatrix}$ | 2) $4 \overline{) 80} \begin{smallmatrix} 20 \end{smallmatrix}$ | 3) $9 \overline{) 270} \begin{smallmatrix} 30 \end{smallmatrix}$ | 4) $6 \overline{) 360} \begin{smallmatrix} 60 \end{smallmatrix}$ |
| 5) $2 \overline{) 60} \begin{smallmatrix} 30 \end{smallmatrix}$ | 6) $7 \overline{) 700} \begin{smallmatrix} 100 \end{smallmatrix}$ | 7) $9 \overline{) 81} \begin{smallmatrix} 9 \end{smallmatrix}$ | 8) $8 \overline{) 640} \begin{smallmatrix} 80 \end{smallmatrix}$ |
| 9) $3 \overline{) 120} \begin{smallmatrix} 40 \end{smallmatrix}$ | 10) $2 \overline{) 600} \begin{smallmatrix} 300 \end{smallmatrix}$ | 11) $5 \overline{) 100} \begin{smallmatrix} 20 \end{smallmatrix}$ | 12) $7 \overline{) 63} \begin{smallmatrix} 9 \end{smallmatrix}$ |
| 13) $24 \div 6$ | 14) $810 \div 9$ | 15) $600 \div 3$ | 16) $20 \div 4$ |
| 17) C. 30 | 18) B. 8 | 19) D. 20 | 20) A. 90 |
| 21) 2 | 22) 2 | | |

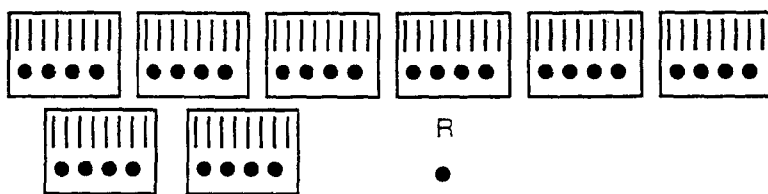
More Estimation Practice/Division

- | | | | |
|---|--|--|--|
| 1) $4 \overline{) 280} \begin{smallmatrix} 70 \end{smallmatrix}$ | 2) $8 \overline{) 72} \begin{smallmatrix} 9 \end{smallmatrix}$ | 3) $6 \overline{) 300} \begin{smallmatrix} 50 \end{smallmatrix}$ | 4) $9 \overline{) 180} \begin{smallmatrix} 20 \end{smallmatrix}$ |
| 5) $5 \overline{) 500} \begin{smallmatrix} 100 \end{smallmatrix}$ | 6) $7 \overline{) 49} \begin{smallmatrix} 7 \end{smallmatrix}$ | 7) $2 \overline{) 80} \begin{smallmatrix} 40 \end{smallmatrix}$ | 8) $3 \overline{) 150} \begin{smallmatrix} 50 \end{smallmatrix}$ |
| 9) $8 \overline{) 32} \begin{smallmatrix} 4 \end{smallmatrix}$ | 10) $6 \overline{) 540} \begin{smallmatrix} 90 \end{smallmatrix}$ or $6 \overline{) 480} \begin{smallmatrix} 80 \end{smallmatrix}$ | | |
| 11) 7 cars | 12) 9 cans of paint | | |

Division with Base Ten Blocks

- | | |
|---|--|
| 1) $9 \overline{) 98} \begin{smallmatrix} 10 \text{ R } 8 \end{smallmatrix} \rightarrow 9 \overline{) 90} \begin{smallmatrix} 10 \end{smallmatrix}$ |  |
| 2) $5 \overline{) 218} \begin{smallmatrix} 43 \text{ R } 3 \end{smallmatrix} \rightarrow 5 \overline{) 250} \begin{smallmatrix} 50 \end{smallmatrix}$ |  |
| 3) $4 \overline{) 86} \begin{smallmatrix} 21 \text{ R } 2 \end{smallmatrix} \rightarrow 4 \overline{) 80} \begin{smallmatrix} 20 \end{smallmatrix}$ |  |
| 4) $6 \overline{) 323} \begin{smallmatrix} 53 \text{ R } 5 \end{smallmatrix} \rightarrow 6 \overline{) 300} \begin{smallmatrix} 50 \end{smallmatrix}$ |  |

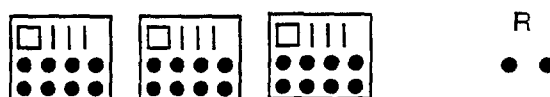
$$5) \quad 8 \overline{) 84} \text{ R } 1 \rightarrow 8 \overline{) 80}$$



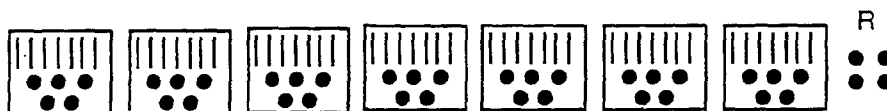
$$6) \quad 4 \overline{) 73} \rightarrow 4 \overline{) 70}$$



$$7) \quad 3 \overline{) 138} \text{ R } 2 \rightarrow 3 \overline{) 100}$$



$$8) \quad 7 \overline{) 75} \text{ R } 4 \rightarrow 7 \overline{) 70}$$



Division Delight

$$1) \quad 2 \overline{) 23} \text{ R } 1 \rightarrow 2 \overline{) 20}$$

$$2) \quad 7 \overline{) 13} \text{ R } 4 \rightarrow 7 \overline{) 10}$$

$$3) \quad 3 \overline{) 29} \rightarrow 3 \overline{) 30}$$

$$4) \quad 9 \overline{) 8} \text{ R } 6 \rightarrow 9 \overline{) 8}$$

$$5) \quad 5 \overline{) 134} \text{ R } 3 \rightarrow 5 \overline{) 100}$$

$$6) \quad 4 \overline{) 189} \rightarrow 4 \overline{) 200}$$

$$7) \quad 6 \overline{) 72} \text{ R } 3 \rightarrow 6 \overline{) 70}$$

$$8) \quad 7 \overline{) 77} \text{ R } 4 \rightarrow 7 \overline{) 80}$$

$$9) \quad 8 \overline{) 64} \text{ R } 5 \rightarrow 8 \overline{) 60}$$

$$10) \quad 5 \overline{) 94} \text{ R } 4 \rightarrow 5 \overline{) 90}$$

Estimate! Divide! Check!

	<u>Estimate</u>	<u>Check</u>
1) $6 \overline{) 59}$	$6 \overline{) 60}$	$\begin{array}{r} 59 \\ \times 6 \\ \hline 354 \end{array}$

	<u>Estimate</u>	<u>Check</u>
2) $4 \overline{) 234}$	$4 \overline{) 200}$	$\begin{array}{r} 234 \\ \times 4 \\ \hline 936 \end{array}$

	<u>Estimate</u>	<u>Check</u>
3) $7 \overline{) 87} \text{ R } 4$	$7 \overline{) 90}$	$\begin{array}{r} 87 \\ \times 7 \\ \hline 609 \\ + 4 \\ \hline 613 \end{array}$

	<u>Estimate</u>	<u>Check</u>
4) $5 \overline{) 65}$	$5 \overline{) 60}$	$\begin{array}{r} 65 \\ \times 5 \\ \hline 325 \end{array}$

	<u>Estimate</u>	<u>Check</u>		<u>Estimate</u>	<u>Check</u>
5) $\begin{array}{r} 11 \text{ R } 7 \\ 8 \overline{) 95} \end{array}$	$\begin{array}{r} 10 \\ 8 \overline{) 80} \end{array}$	$\begin{array}{r} 11 \\ \times 8 \\ \hline 88 \\ + 7 \\ \hline 95 \end{array}$	6) $\begin{array}{r} 237 \text{ R } 1 \\ 2 \overline{) 475} \end{array}$	$\begin{array}{r} 200 \\ 2 \overline{) 400} \end{array}$	$\begin{array}{r} 237 \\ \times 2 \\ \hline 474 \\ + 1 \\ \hline 475 \end{array}$
7) $\begin{array}{r} 9 \text{ R } 5 \\ 6 \overline{) 59} \end{array}$	$\begin{array}{r} 10 \\ 6 \overline{) 60} \end{array}$	$\begin{array}{r} 9 \\ \times 6 \\ \hline 54 \\ + 5 \\ \hline 59 \end{array}$	8) $\begin{array}{r} 28 \\ 3 \overline{) 84} \end{array}$	$\begin{array}{r} 30 \\ 3 \overline{) 90} \end{array}$	$\begin{array}{r} 28 \\ \times 3 \\ \hline 84 \end{array}$
9) $\begin{array}{r} 83 \text{ R } 4 \\ 9 \overline{) 751} \end{array}$	$\begin{array}{r} 80 \\ 9 \overline{) 720} \end{array}$	$\begin{array}{r} 83 \\ \times 9 \\ \hline 747 \\ + 4 \\ \hline 751 \end{array}$			

Let's Divide

1) $\begin{array}{r} 105 \text{ R } 3 \\ 5 \overline{) 528} \end{array} \rightarrow \begin{array}{r} 100 \\ 5 \overline{) 500} \end{array}$

2) $\begin{array}{r} 71 \text{ R } 5 \\ 7 \overline{) 502} \end{array} \rightarrow \begin{array}{r} 70 \\ 7 \overline{) 490} \end{array}$

3) $\begin{array}{r} 93 \text{ R } 2 \\ 8 \overline{) 746} \end{array} \rightarrow \begin{array}{r} 90 \\ 8 \overline{) 720} \end{array}$

4) $\begin{array}{r} 55 \text{ R } 3 \\ 6 \overline{) 333} \end{array} \rightarrow \begin{array}{r} 50 \\ 6 \overline{) 300} \end{array}$

5) $\begin{array}{r} 104 \text{ R } 2 \\ 9 \overline{) 938} \end{array} \rightarrow \begin{array}{r} 100 \\ 9 \overline{) 900} \end{array}$

6) $\begin{array}{r} 114 \\ 7 \overline{) 798} \end{array} \rightarrow \begin{array}{r} 100 \\ 7 \overline{) 700} \end{array}$

7) 8 flowers

8) 14 pictures 2 pictures left over

9) 31 pages

10) 8 cars

11) 207 people

Digit Detective

1) $\begin{array}{r} 5 \boxed{4} \\ 7 \overline{) 378} \\ - 3 \boxed{5} \\ \hline 2 \boxed{8} \\ - 2 \boxed{8} \\ \hline 0 \end{array}$

2) $\begin{array}{r} \boxed{7} 2 \\ 8 \overline{) 576} \\ - 5 \boxed{6} \\ \hline \boxed{1} \boxed{6} \\ - \boxed{1} 6 \\ \hline 0 \end{array}$

3) $\begin{array}{r} 67 \\ \boxed{5} \overline{) 335} \\ - 3 \boxed{0} \\ \hline \boxed{3} 5 \\ - 3 \boxed{5} \\ \hline 0 \end{array}$

4) $\begin{array}{r} 6 \boxed{8} \text{ R } \boxed{1} \\ 6 \overline{) 409} \\ - \boxed{3} 6 \\ \hline \boxed{4} 9 \\ - \boxed{4} 8 \\ \hline \boxed{1} \end{array}$

5) $\begin{array}{r} \boxed{6} 8 \text{ R } \boxed{4} \\ 9 \overline{) 616} \\ - 5 \boxed{4} \\ \hline \boxed{7} \boxed{6} \\ - 7 \boxed{2} \\ \hline 4 \end{array}$

6) $\begin{array}{r} \boxed{1} 23 \\ 8 \overline{) 984} \\ - 8 \\ \hline \boxed{1} 8 \\ - \boxed{1} \boxed{6} \\ \hline 2 \boxed{4} \\ - \boxed{2} \boxed{4} \\ \hline 0 \end{array}$

7) $\begin{array}{r} \boxed{3} \boxed{0} 1 \\ 3 \overline{) 903} \\ - 9 \\ \hline \boxed{0} 0 \\ - \boxed{0} 0 \\ \hline \boxed{0} 3 \\ - \boxed{3} \\ \hline 0 \end{array}$

8) $\begin{array}{r} 14 \boxed{3} \\ 4 \overline{) 572} \\ - \boxed{4} \\ \hline \boxed{1} \boxed{7} \\ - \boxed{1} 6 \\ \hline 1 \boxed{2} \\ - 1 \boxed{2} \\ \hline 0 \end{array}$

Objective 15: Estimate and divide by 2-digit divisors.

Vocabulary

There are no new words.

Materials

calculators
graph paper (optional)
rulers (optional)

Transparencies:

Division Estimation

2-Digit Division I

2-Digit Division I I

Student Copies:

Let's Estimate!

Time to Divide

More Dividing

Division, Division, Division

At the Pet Store

Let's Practice Division

Class Problems

Language Foundation

1. Since students have done several lessons on division by this point, they should be very familiar with the vocabulary. Encourage them to use the new words they have learned whenever appropriate. Students may also be assessed on their use of the vocabulary.

Mathematics Component

1. Estimate by 2-digit divisors.

- Display the transparency Division Estimation. Use a cover sheet so only the first problem is showing.
- Ask a student to read problem #1. (981 divided by 39) Tell students the estimated quotient needs to be found.
- Ask students how this problem is different from previous division problems. (There are 2 digits in the divisor.)
- Tell students that to estimate division problems with 2-digit divisors, compatible numbers are used.
- Tell students to estimate division problems with a 2-digit divisor, the first step is to round the divisor to the nearest ten. Ask students what 39 is rounded to the nearest ten. (40) Write 40 on the transparency.
- Tell students that the next step is to make the dividend compatible with 40.
- Cover the 8 and the 1 with your finger. Ask students if 9 can be divided by 40. (no)
- Uncover the 8, leaving just the 1 covered. Ask students if 98 can be divided by 40. (yes)
- Ask students what number is closest to 98 that can be divided by 40 mentally. (80) Write 80 in the dividend of the estimated problem.
- Ask students what to do with the 1. (Make the 1 a 0.) Write 0 in the dividend of the estimated problem.
- Ask students the quotient of $800 \div 40$. (20) Write 20 on the transparency.

$$39 \overline{)981} \rightarrow 40 \overline{)800}^{20}$$

- Ask students how many digits there are in the quotient. (2) Ask students what the place values are. (1 digit in the tens place and 1 digit in the ones place.)
- Do problems #2 - 8 in the same manner. Remind students to round divisor to the nearest ten before looking for the compatible numbers. Emphasize the number of digits in each quotient and the place value of the digits.
- Distribute Let's Estimate! Go over the example. Have students complete the activity page.

2. Divide using 2-digit divisors with no correction of estimates.

- Ask students what the steps are in division when dividing by 1-digit divisors. (divide, multiply, subtract, bring down) Tell students those same steps will be used when dividing by 2-digit divisors.
- Display the transparency 2-Digit Division I. Use a cover sheet so only problem #1 is showing. Have a student read the problem. (385 divided by 32)
- Tell students the first step is to estimate the quotient. Have a student explain the steps as he/she

estimates the quotient. (Round the divisor to the nearest ten which is 30. Find the compatible number which is 30. The 5 becomes a zero. $300 \div 30 = 10$.) Write the estimated problem and quotient on the transparency.

$$32 \overline{)385} \rightarrow 30 \overline{)300}^{10}$$

- Ask students how many digits will be in the quotient. (2) Ask students the place value of the 2 digits. (1 digit in the tens place and 1 digit in the ones place) Draw a box in the tens place in the quotient. Tell students the first number in the quotient will go in the box in the tens place.

$$\begin{array}{r} \square \\ 32 \overline{)385} \end{array}$$

- Tell students the rounded divisor will be used to help find the quotient. Write 30 in the bubble by the divisor to remind the students to “think 30” when dividing by 32 since it is easier to divide mentally by 30 than it is by 32.

$$\begin{array}{r} \textcircled{30} \quad \square \\ 32 \overline{)385} \end{array}$$

- Tell students to use compatible numbers to find the estimated quotient of $38 \div 30$. Remind them the estimated quotient can help them. ($30 \div 30 = 1$) Write 1 in the quotient in the box in the tens place.

$$\begin{array}{r} \textcircled{30} \quad \boxed{1} \\ 32 \overline{)385} \end{array}$$

- Remind students of the steps in division. (divide, multiply, subtract, bring down) Ask students what step is next. (multiply)
- Tell students to remember to multiply the divisor (not the estimated divisor). The estimated divisor is used to get an approximate answer since it is easier to use mentally. $32 \times 1 = 32$. Record the 32 under the 38.

$$\begin{array}{r} \textcircled{30} \quad \boxed{1} \\ 32 \overline{)385} \\ \underline{32} \end{array}$$

- Ask students what the next step is. (subtract) Ask students what $38 - 32$ is. (6) Write 6 under the 2.

$$\begin{array}{r} \textcircled{30} \quad \boxed{1} \\ 32 \overline{)385} \\ \underline{-32} \\ 6 \end{array}$$

- Ask students what the next step is. (bring down) Write 5 next to the 6.
- Ask students what the next step is. (Divide 65 by 32.) Remind students to think of compatible numbers to make computation easier. ($60 \div 30 = 2$) Write 2 in the quotient in the ones place.

$$\begin{array}{r} \textcircled{30} \quad \boxed{12} \\ 32 \overline{)385} \\ \underline{-32} \\ 65 \end{array}$$

- Ask students what the next step is. (Multiply 32×2 .) $32 \times 2 = 64$. (If students have difficulty multiplying without recording the problem, demonstrate how to write the problem off to the side under the estimated problem.) Write 64 under 65.

$$\begin{array}{r} \textcircled{30} \quad \boxed{1}2 \\ 32 \overline{) 385} \\ \underline{- 32} \\ 65 \\ \underline{64} \end{array}$$

- Ask students what the next step is. (Subtract 64 from 65.) $65 - 64 = 1$. Write 1 under the 4. Since there are no other numbers to bring down, ask students what to do with the 1. (The 1 becomes the remainder and is written in the quotient.)

$$\begin{array}{r} \textcircled{30} \quad \boxed{1}2 \text{ R } 1 \\ 32 \overline{) 385} \\ \underline{- 32} \\ 65 \\ \underline{64} \\ 1 \end{array}$$

- Ask students how to check the problem to see if the answer is correct. (Multiply 32×12 and add 1 to the product.) Have a student check the problem using a calculator.
 - Work together to complete problem #2 in the same manner. Estimate first. Draw a box in the quotient in the hundreds place to remind the students the quotient begins in the hundreds place. Put 60 (61 rounded to the nearest ten) in the "think" bubble. Remind students to think 60 instead of 61 when trying to decide how many times the dividend can be divided by the quotient. If students have difficulty with the computation, write the computation off to the side to solve.
 - Complete a few other examples ($533 \div 47$; $984 \div 24$; $2,666 \div 39$) with the class. Use graph paper or draw lines to separate place value. Estimate first and place the estimated divisor in a think bubble. Make sure the largest place value in the quotient is marked with a box so students know where the quotient begins. Use a calculator to check.
 - Distribute Time to Divide. Go over example with students. Have students complete activity page. When finished, have students use a calculator to check work and correct any mistakes. Check answers together.
3. Divide using 2-digit divisors with correction of estimates.
- Display the transparency 2-Digit Division II. Use a cover sheet so only problem #1 shows. Problem #1 is an example of correcting an estimate and redoing part of the problem. Have a student read the problem. (3,186 divided by 54)

- Ask students what the first step is. (Estimate the quotient.) Have a student explain the steps as he/she estimates the quotient. (Round the divisor to the nearest ten which is 50. Find the compatible number which is 300. The 6 becomes a zero. $3,000 \div 50 = 60$.) Write the estimated problem and quotient on the transparency.

$$54 \overline{) 3,186} \rightarrow 50 \overline{) 3,000}^{60}$$

- Ask students how many digits will be in the quotient. (2) Ask students the place value of the 2 digits. (1 digit in the tens place and 1 digit in the ones place) Draw a box in the quotient in the tens place so students know the first digit is in the tens place.
- Direct students' attention to the computation problem. Ask students what number should be written in the bubble. (50) Write 50 in the bubble by the divisor.
- Ask students what compatible numbers can be used to find the quotient of $318 \div 50$. ($300 \div 50 = 6$) Write 6 in the box in the quotient in the tens place.

$$\textcircled{50} \quad 54 \overline{) 3,186} \quad \boxed{6}$$

- Ask students the next step. (Multiply 54×6 .) $54 \times 6 = 324$. Write 324 under 318.

$$\textcircled{50} \quad 54 \overline{) 3,186} \quad \boxed{6} \\ 324$$

- Ask students the next step. (Subtract 324 from 318.) Students should realize that since 324 is larger than 318, subtraction will not result in a positive number. Ask students to speculate about how they should fix this problem. (Answers will vary but students should realize that 54 can't go into 318 six times; the product (324) is larger than the original number (318). Therefore, 54 goes into 318 fewer than 6 times. Since 324 (54×6) is only a little larger than 318, it is logical for 54 to go into 318 five times.)
- Tell students that sometimes estimation results in a number that is too high. When that happens, you have to make the estimate 1 less. Tell students there is no definitive rule that states when overestimation will occur. Estimation is the best tool to solve division problems with 2-digit divisors since it works over half of the time. However, sometimes correction of the original estimate is necessary.
- Erase 6 and 324 from the transparency. Tell students that since 6 resulted in an overestimate the estimate must be 1 less than 6, or 5. Write 5 in the tens place in the quotient.
- Ask students the next step. (Multiply 54×5 .) $54 \times 5 = 270$. Write 270 under 318.

$$\textcircled{50} \quad 54 \overline{) 3,186} \quad \boxed{5} \\ 270$$

- Ask students the next step. (Subtract 270 from 318.) $318 - 270 = 48$. Write 48 under 70.

$$\begin{array}{r} \textcircled{50} \quad 54 \overline{) 3,186} \\ \underline{- 270} \\ 48 \end{array}$$

- Ask students what the next step is. (Bring down the 6.) Write 6 next to the 48.
- Ask students what the next step is. (Divide 486 by 54.) Remind students to think of compatible numbers to make it easier. ($500 \div 50 = 10$ is the most common response. Tell students that there is just 1 digit left in the answer so 10 must be too high or an overestimate. A correction must be made that is one less so 9 is the correct estimate.) Write 9 in the ones place of the quotient.

$$\begin{array}{r} \textcircled{50} \quad 54 \overline{) 3,186} \\ \underline{- 270} \\ 486 \end{array}$$

- Ask students what the next step is. (Multiply 54×9 .) $54 \times 9 = 486$. Write 486 under 486.

$$\begin{array}{r} \textcircled{50} \quad 54 \overline{) 3,186} \\ \underline{- 270} \\ 486 \\ \underline{486} \end{array}$$

- Ask students what the next step is. (Subtract 486 from 486.) $486 - 486 = 0$. Write 0 under the 6.

$$\begin{array}{r} \textcircled{50} \quad 54 \overline{) 3,186} \\ \underline{- 270} \\ 486 \\ \underline{- 486} \\ 0 \end{array}$$

- Ask students how to check the problem to see if answer is correct. (Multiply 54×59 .) Have a student check the problem using a calculator.
- Work together to complete problem #2 in the same manner. This problem has an overestimation/correction.
- Complete a few other examples ($301 \div 12$; $6,227 \div 67$; $3,723 \div 35$) with the class. Use graph paper or draw lines to separate the place values. Estimate the quotient first and place the estimated divisor in the think bubble. Draw a box in the quotient to indicate the largest place value of the quotient. Use a calculator to check.
- Distribute More Dividing. Go over the example with students. Remind students that sometimes overestimation occurs and there must be a correction. Have students complete the activity page. Tell students to use a calculator to check and correct any mistakes. Check answers together.

- Division, Division, Division, At the Pet Store, Let's Practice Division, and Class Problems are included for further practice. If students have difficulty separating the place values, have them draw lines in the problems, use graph paper, or turn lined notebook paper so the lines are vertical. Have students use a calculator to check their work.

Division Estimation

①

$$39 \overline{) 981} \rightarrow \quad _$$

②

$$31 \overline{) 899} \rightarrow \quad _$$

③

$$12 \overline{) 674} \rightarrow \quad _$$

④

$$41 \overline{) 5,178} \rightarrow \quad _$$

⑤

$$56 \overline{) 3,777} \rightarrow \quad _$$

⑥

$$84 \overline{) 8,976} \rightarrow \quad _$$

⑦

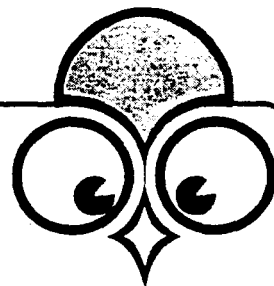
$$47 \overline{) 43,749} \rightarrow \quad _$$

⑧

$$73 \overline{) 76,759} \rightarrow \quad _$$

Name _____

Let's Estimate!



Estimate the quotient.

$$73 \overline{)4,767}$$

Round the divisor to the nearest ten.

$$73 \rightarrow 70$$

Look at the first digit. You can't divide 4 by 70.

$$70 \overline{)4}$$

Look at the first 2 digits. You can't divide 47 by 70.

$$70 \overline{)47}$$

Look at the first 3 digits. 476 can be divided by 70.

Find a compatible number to divide by 70.

$$70 \overline{)476} \rightarrow 70 \overline{)490}$$

Remaining place(s) in dividend become zero(s).

$$70 \overline{)4,900}$$

Use mental math to find estimate.

$$70 \overline{)4,900} \begin{array}{r} 70 \\ \hline \end{array}$$

Estimate the quotients.

1) $17 \overline{)789} \rightarrow \underline{\hspace{2cm}}$

2) $68 \overline{)584} \rightarrow \underline{\hspace{2cm}}$

3) $61 \overline{)825} \rightarrow \underline{\hspace{2cm}}$

4) $92 \overline{)2,732} \rightarrow \underline{\hspace{2cm}}$

5) $86 \overline{)4,465} \rightarrow \underline{\hspace{2cm}}$

6) $44 \overline{)3,785} \rightarrow \underline{\hspace{2cm}}$

7) $34 \overline{)9,784} \rightarrow \underline{\hspace{2cm}}$

8) $68 \overline{)34,576} \rightarrow \underline{\hspace{2cm}}$

9) $47 \overline{)52,989} \rightarrow \underline{\hspace{2cm}}$

10) $83 \overline{)71,943} \rightarrow \underline{\hspace{2cm}}$

- 11) **Circle** the pair of **compatible** numbers for $591 \div 34$.

$600 \div 35$

$500 \div 30$

$600 \div 30$

$600 \div 40$

- 12) **Circle** the **compatible** numbers for $3,703 \div 58$.

$3,500 \div 50$

$3,600 \div 60$

$4,000 \div 50$

$3,500 \div 60$

- 13) **Circle** the **compatible** numbers for $7,315 \div 77$.

$7,200 \div 80$

$7,000 \div 70$

$8,000 \div 80$

$7,200 \div 70$

- 14) **Circle** the **compatible** numbers for $59,024 \div 68$.

$60,000 \div 70$

$60,000 \div 60$

$58,000 \div 70$

$56,000 \div 70$



- Circle** the **best estimate** for the following problems.

15) $308 \div 83$

A. 4

B. 40

C. 30

D. 3

16) $7,444 \div 35$

A. 200

B. 20

C. 100

D. 2,000

17) $6,185 \div 71$

A. 9

B. 90

C. 80

D. 900

18) $79,754 \div 88$

A. 80

B. 90

C. 900

D. 800

19) $23,078 \div 54$

A. 40

B. 500

C. 50

D. 400

20) How many digits are in the quotient?

$$77 \overline{) 4,792}$$

_____ digits

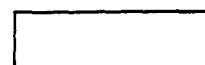
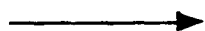
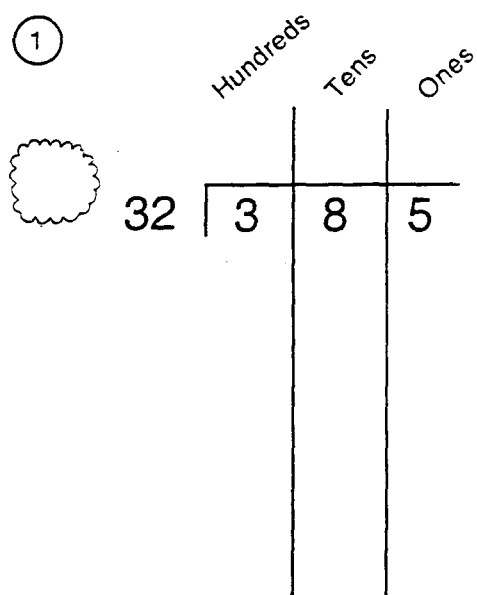
21) How many digits are in the quotient?

$$24 \overline{) 5,767}$$

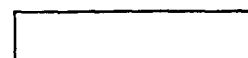
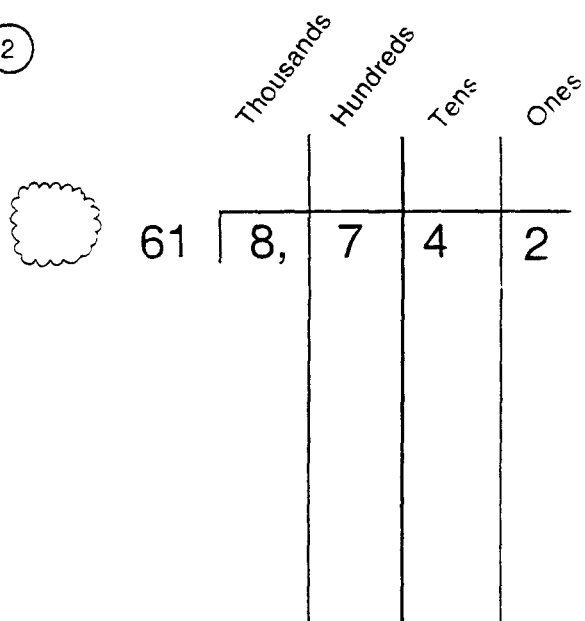
_____ digits

2-Digit Division I

①

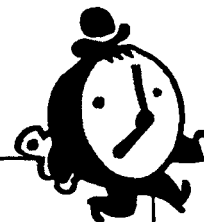


②



Name _____

Time to Divide



Example

Estimate



$$\begin{array}{r} \textcircled{30} \quad 27 \overline{) 569} \quad \text{R } 2 \\ - 54 \\ \hline 29 \\ - 27 \\ \hline 2 \end{array} \rightarrow$$

$$30 \overline{) 600} \quad \begin{array}{l} 20 \\ \hline \end{array}$$

Estimate, then divide. Check all answers using a calculator.

1)

Estimate

$$\textcircled{} \quad 42 \overline{) 97} \rightarrow \begin{array}{|c|} \hline \\ \hline \end{array}$$

2)

Estimate

$$\textcircled{} \quad 22 \overline{) 88} \rightarrow \begin{array}{|c|} \hline \\ \hline \end{array}$$

3)

Estimate

$$\textcircled{} \quad 52 \overline{) 321} \rightarrow \begin{array}{|c|} \hline \\ \hline \end{array}$$

4)

Estimate

$$\textcircled{} \quad 31 \overline{) 970} \rightarrow \begin{array}{|c|} \hline \\ \hline \end{array}$$

5)

Estimate

$$\textcircled{} \quad 76 \overline{) 5478} \rightarrow \begin{array}{|c|} \hline \\ \hline \end{array}$$

6)

Estimate

$$\textcircled{} \quad 62 \overline{) 1341} \rightarrow \begin{array}{|c|} \hline \\ \hline \end{array}$$

2-Digit Division II

①

	Thousands	Hundreds	Tens	Ones
54	3,	1	8	6

→

②

	Thousands	Hundreds	Tens	Ones
38	7,	5	1	9

→

Name _____

More Dividing



Sometimes the estimate is too high and you have to correct it.

Think: Compatible numbers
for $92 \div 32$ $90 \div 30 = 3$.

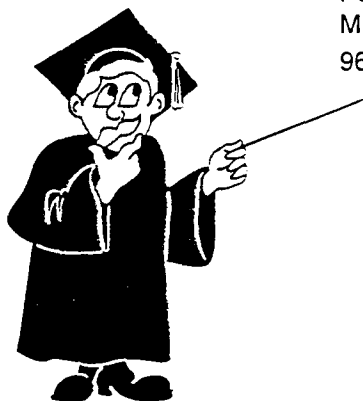
$$\begin{array}{r} 30 \\ 32 \overline{) 92} \end{array}$$

Put 3 in quotient.

Multiply: $32 \times 3 = 96$.

96 is greater than 92 - can't subtract.

$$\begin{array}{r} 30 \\ 32 \overline{) 92} \\ \underline{96} \end{array}$$



Correct estimate to 2.
Multiply: $32 \times 2 = 64$.

$$\begin{array}{r} 30 \\ 32 \overline{) 92} \\ \underline{64} \end{array}$$

Subtract: $92 - 64 = 28$.
Answer is 2 R 28.

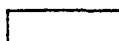
$$\begin{array}{r} 30 \\ 32 \overline{) 92} \\ \underline{- 64} \\ 28 \end{array}$$

1)

$$\begin{array}{r} 36 \overline{) 715} \\ \underline{} \\ \underline{} \\ \underline{} \end{array}$$



Estimate

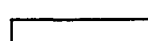


2)

$$\begin{array}{r} 78 \overline{) 6,222} \\ \underline{} \\ \underline{} \\ \underline{} \end{array}$$



Estimate



3) Estimate

$$\begin{array}{r} \text{ } \\ 49 \overline{) 241} \\ \underline{} \\ \end{array}$$

→ $\boxed{}$

4) Estimate

$$\begin{array}{r} \text{ } \\ 64 \overline{) 1,235} \\ \underline{} \\ \\ \underline{} \\ \\ \underline{} \\ \end{array}$$

→ $\boxed{}$

5)

$$\begin{array}{r} \text{ } \\ 24 \overline{) 195} \\ \underline{} \\ \end{array}$$

→ $\boxed{}$

6)

$$\begin{array}{r} \text{ } \\ 79 \overline{) 8,569} \\ \underline{} \\ \\ \underline{} \\ \\ \underline{} \\ \end{array}$$

→ $\boxed{}$

7)

$$\begin{array}{r} \text{ } \\ 41 \overline{) 805} \\ \underline{} \\ \\ \underline{} \\ \end{array}$$

→ $\boxed{}$

8)

$$\begin{array}{r} \text{ } \\ 23 \overline{) 1,157} \\ \underline{} \\ \\ \underline{} \\ \\ \underline{} \\ \end{array}$$

→ $\boxed{}$

Name _____

Division, Division, Division!

Estimate, then solve.

1) 28 $\overline{)156}$ \longrightarrow $\boxed{}$

2) 62 $\overline{)942}$ \longrightarrow $\boxed{}$

3) 45 $\overline{)6,391}$ \longrightarrow $\boxed{}$

4) 32 $\overline{)964}$ \longrightarrow $\boxed{}$

5) 76 $\overline{)5,478}$ \longrightarrow $\boxed{}$

6) 56 $\overline{)584}$ \longrightarrow $\boxed{}$

7) 18 $\overline{)7,209}$ \longrightarrow $\boxed{}$

8) 48 $\overline{)321}$ \longrightarrow $\boxed{}$

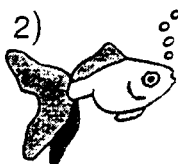
Name _____

At the Pet Store

- 1) The pet store has 84 birds. There are 14 large bird cages. There are the same number of birds in each cage. How many birds are in each cage?



- 2) There are 165 fish in a large tank. The owner of the store wants to put the fish in smaller tanks. There will be 15 fish in each of the smaller tanks. How many smaller fish tanks does the store owner need?



- 3) There are 52 puppies at the pet store. There are 13 cages. Each cage holds the same number of puppies. How many puppies are in each cage?



- 4) There are 80 cages at the pet store. Each of the pet store's 19 employees cleans the same number of cages. The owner cleans any leftover cages. How many cages will each employee clean?



How many cages will the owner clean?

- 5) There are 128 boxes of pet food on a shelf. The boxes are in rows of 24 each. How many full rows of boxes are there?



How many boxes are left over?

- 6) The pet store also has 135 kittens. There are 12 cages with the same number of kittens in each cage. The remainder of the kittens are in the display window.

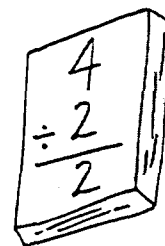


How many kittens are in each cage?

How many kittens are in the display window?

Name _____

Let's Practice Division



Circle the **correct** answer.

- | | | | | |
|--------------------|------------|------------|-------------|------------|
| 1) $68 \div 26$ | a. 2 | b. 2 R16 | c. 3 R10 | d. 3 R16 |
| 2) $901 \div 38$ | a. 24 | b. 24 R27 | c. 23 R27 | d. 25 |
| 3) $230 \div 35$ | a. 6 R15 | b. 6 R 20 | c. 7 R 5 | d. 7 R15 |
| 4) $8,120 \div 59$ | a. 137 R37 | b. 138 R37 | c. 147 R 37 | d. 148 R37 |



Estimate each quotient.

Write the place value of the first digit of the quotient.

Example:	$15 \overline{) 4,251} \rightarrow$	<u>Estimate</u>	<u>Place value of first digit</u>
		$20 \overline{) 4,000}$	<u>hundreds place</u>

- | | <u>Estimate</u> | <u>Place value of first digit</u> |
|--|------------------------|-----------------------------------|
| 5) $26 \overline{) 317} \rightarrow$ | $\boxed{}$ | _____ |
| 6) $58 \overline{) 3,891} \rightarrow$ | $\boxed{}$ | _____ |
| 7) $81 \overline{) 621} \rightarrow$ | $\boxed{}$ | _____ |
| 8) $28 \overline{) 8,951} \rightarrow$ | $\boxed{}$ | _____ |

- 9) There are 27 students in Raoul's art class. There are 108 jars of paint. Each student gets an equal number of jars of paint. How many jars of paint will each student get?



- 10) The drama club has 108 containers of juice. They have 36 containers of each kind of juice. How many different kinds of juice does the drama club have?



- 11) Maria's class sold 4,898 candy bars in 62 days. They sold the same number of candy bars each day. How many candy bars did they sell each day?



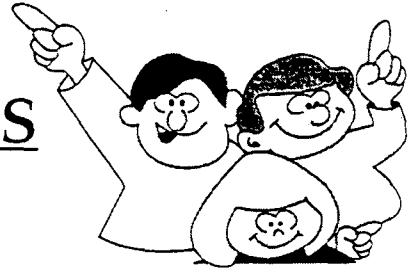
- 12) Peter has to pack 176 bran muffins in boxes. He puts 16 muffins in each box. How many full boxes does he pack?



- 13) What is the greatest number of **digits** possible in a quotient if a **3-digit** number is divided by a **2-digit** number? Show an **example**.

Name _____

CLASS PROBLEMS



1. Write a **word problem** using the following information:

Your teacher has 425 crackers to divide equally among the students in your class.

2. Write a **word problem** using the following information:

The principal of your school is giving your class 83 CDs. Each student receives the same number of CDs and the teacher gets any leftover CDs.

Answer Key **Mult. and Div. - Obj. 15**

Let's Estimate

1) $20 \overline{) 800}$

2) $70 \overline{) 560}$

3) $60 \overline{) 600}$

4) $90 \overline{) 2,700}$

5) $90 \overline{) 4,500}$

6) $40 \overline{) 3,600}$

7) $30 \overline{) 9,000}$

8) $70 \overline{) 35,000}$

9) $50 \overline{) 50,000}$

10) $80 \overline{) 72,000}$

11) $600 \div 30$

12) $3,600 \div 60$

13) $7,200 \div 80$

14) $56,000 \div 70$

15) A. 4

16) A. 200

17) B. 90

18) C. 900

19) B. 500

20) 2 digits

21) 3 digits

Time to Divide

1) $\textcircled{40} 42 \overline{) 97} \text{ R } 13 \rightarrow 40 \overline{) 80}$

2) $\textcircled{20} 22 \overline{) 89} \text{ R } 1 \rightarrow 20 \overline{) 80}$

3) $\textcircled{50} 52 \overline{) 321} \text{ R } 9 \rightarrow 50 \overline{) 300}$

4) $\textcircled{30} 31 \overline{) 970} \text{ R } 9 \rightarrow 30 \overline{) 900}$

5) $\textcircled{80} 76 \overline{) 5,478} \text{ R } 6 \rightarrow 80 \overline{) 5,600}$

6) $\textcircled{60} 62 \overline{) 1,341} \text{ R } 39 \rightarrow 60 \overline{) 1,200}$

More Dividing

1) $\textcircled{40} 36 \overline{) 715} \text{ R } 31 \rightarrow 40 \overline{) 800}$

2) $\textcircled{80} 78 \overline{) 6,222} \text{ R } 60 \rightarrow 80 \overline{) 6,400}$

3) $\textcircled{50} 49 \overline{) 241} \text{ R } 45 \rightarrow 50 \overline{) 250}$

4) $\textcircled{60} 64 \overline{) 1,235} \text{ R } 19 \rightarrow 60 \overline{) 1,200}$

5) $\textcircled{20} 24 \overline{) 195} \text{ R } 3 \rightarrow 20 \overline{) 200}$

6) $\textcircled{80} 79 \overline{) 8,569} \text{ R } 37 \rightarrow 80 \overline{) 8,000}$

7) $\textcircled{40} 43 \overline{) 805} \text{ R } 31 \rightarrow 40 \overline{) 800}$

8) $\textcircled{20} 23 \overline{) 1,157} \text{ R } 7 \rightarrow 20 \overline{) 1,200}$

Division. Division. Division!

1) $\textcircled{30} \overline{28 \over 156} \text{ R } 16 \rightarrow 30 \overline{150}$

2) $\textcircled{60} \overline{62 \over 942} \text{ R } 12 \rightarrow 60 \overline{600}$

3) $\textcircled{50} \overline{45 \over 6,391} \text{ R } 1 \rightarrow 50 \overline{5,000}$

4) $\textcircled{30} \overline{32 \over 964} \text{ R } 4 \rightarrow 30 \overline{900}$

5) $\textcircled{80} \overline{76 \over 5,478} \text{ R } 6 \rightarrow 80 \overline{5,600}$

6) $\textcircled{60} \overline{56 \over 584} \text{ R } 24 \rightarrow 60 \overline{600}$

7) $\textcircled{20} \overline{18 \over 7,209} \text{ R } 9 \rightarrow 20 \overline{8,000}$

8) $\textcircled{50} \overline{48 \over 321} \text{ R } 33 \rightarrow 50 \overline{300}$

At the Pet Store

1) 6 birds

2) 11 tanks

3) 4 puppies

4) 4 cages; 4 cages

5) 5 rows; 8 boxes

6) 11 kittens; 3 kittens

Let's Practice Division

1) b. 2 R 16

2) c. 23 R 27

3) b. 6 R 20

4) a. 137 R 37

5) $\textcircled{30} \overline{300} \text{ tens place}$

6) $\textcircled{60} \overline{3,600} \text{ tens place}$

7) $\textcircled{80} \overline{640} \text{ ones place}$

8) $\textcircled{300} \overline{9,000} \text{ hundreds place}$

9) 4 jars

10) 3 kinds of juice

11) 79 candy bars

12) 11 full boxes

13) 2 digits Examples will vary.

Objective 16: Interpret the quotient and remainder.

Vocabulary

All vocabulary has been previously taught.

Language Foundation

1. In this lesson students will be asked to answer problems where the answer may be the quotient, the remainder, or the quotient plus one. Most students will not have encountered problems of this nature before. Encourage students to read each problem several times and think about what it is asking. It may be helpful for some students to underline the key words in each problem.

Materials

Transparencies:

The Sweater Store

Division Practice

Student Copies:

Quotients and Remainders

One Problem - Three Stories

Mathematics Component

1. Demonstrate three ways to interpret the quotient and remainder.

- Display the transparency The Sweater Store. Use a cover sheet so only problem #1 shows. Have a student read problem #1 out loud.
- Ask students what is the question being asked. (On how many shelves will there be 6 sweaters?)
- Ask students what information is given. (There are 27 sweaters. Each shelf holds 6 sweaters.)
- Ask students what operation is used to answer the question. (division)
- Ask students to set up the division problem. Write the division problem on the transparency under problem #1.

$$6 \overline{)27}$$

- Ask students what the 27 represents. (27 sweaters) Ask students what the 6 represents. (The sweaters are put 6 to a shelf.)
- Work together to solve the problem. Write the computation on the transparency.

$$\begin{array}{r} 4 \text{ R } 3 \\ 6 \overline{)27} \\ - 24 \\ \hline 3 \end{array}$$

- Ask students what the 4 represents. (4 shelves with 6 sweaters on each shelf) Ask students what the remainder represents. (3 sweaters that are left over.)
- Ask students again what question is asked in problem #1. (On how many shelves will there be 6 sweaters?) Ask students what is the answer to the question. (4 shelves) Write 4 shelves on the transparency under problem #1.
- Uncover problem #2. Have a student read the problem out loud. You might have to explain the phrase display counter to students. Remind students that the problem is a continuation of problem #1.
- Ask students what is the question being asked. (How many sweaters does Ana put on the display counter?)
- Ask students what is known already. (There are 27 sweaters. Ana puts 6 sweaters on each of 4 shelves. There are 3 sweaters left over that are not on shelves.)
- Ask students if a new computation problem is needed to solve this problem. (No, because the answer is the remainder in the division problem in #1.)
- Ask students to solve problem #2. (3 sweaters) Write 3 sweaters on the transparency under problem #2.
- Uncover problem #3. Have a student read the problem out loud.
- Ask students what new information is given in the problem. (Ana puts all the sweaters on shelves.)
- Ask students what question is being asked. (How many shelves will Ana need now?)
- Ask students if a new computation problem is needed to solve this problem. (no)
- Ask students to solve problem #3. (The 3 leftover sweaters need to be put on a shelf so 1 more

shelf is needed. The answer is 5 shelves.) Write 5 shelves on the transparency under problem # 3.

- Point out to students that 1 division problem ($27 \div 6$) was used to answer 3 different questions.
- Uncover the remainder of the transparency. Read the information about the use of the quotient and remainder to students. Refer back to problems #1-3 as examples.

2. Interpret the quotient and remainder in word problems.

- Display the transparency Division Practice so only problem #1 is showing.
- Have a student read problem #1 out loud. Ask students what is the question being asked. (How many 8 ounce glasses of juice will you pour?)
- Ask students what operation is used to solve the problem. (division) Ask students to set up the division problem. Write the division problem on the transparency under problem #1.

$$8 \overline{)46}$$

- Ask students what the 46 represents. (46 ounces of juice) Ask students what the 8 represents. (8 ounces of juice, enough juice to fill 1 glass)
- Work together to solve the problem. Write the computation on the transparency.

$$\begin{array}{r} 5 \text{ R } 6 \\ 8 \overline{)46} \\ - 40 \\ \hline 6 \end{array}$$

- Ask students what the 5 represents. (5 glasses of juice with 8 ounces in each glass) Ask students what the 6 represents. (the leftover ounces of juice)
- Ask students again what question is being asked in problem #1. (How many 8 ounce glasses of juice will you pour?) Ask students to answer to the question. (5 glasses) Write 5 glasses on the transparency. Point out to students that in this problem the quotient answered the question.
- Uncover problem #2. Have a student read the problem out loud. Ask students what is the question being asked. (How many trips will the boat make across the river in order to carry 168 people?)
- Ask students what operation is used to solve the problem. (division) Ask students to set up the division problem. Write the division problem on the transparency under problem #2.

$$25 \overline{)168}$$

- Ask students what the 168 represents. (number of people) Ask students what the 25 represents. (number of people boat holds)
- Work together to solve the problem. Write the computation on the transparency.

$$\begin{array}{r} 6 \text{ R } 18 \\ 25 \overline{)168} \\ - 150 \\ \hline 18 \end{array}$$

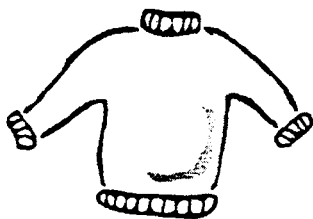
- Ask students what the 6 represents. (number of full boats making the trip) Ask students what the 18 represents. (number of people who are left over or number of people who can't fit on a full boat)
- Ask students again what is the question being asked. (How many trips will the boat make across the river in order to carry 168 people?) Ask students what is the the answer to this question. (7 trips) Write 7 trips on the transparency. If students think the answer is 6 trips, remind them that all 168 people must go across the river. There will be 6 trips where the boat is full and one trip where the boat has only 18 people. Point out to students that in this problem the answer is the quotient plus 1.
- Uncover problem #3 on the transparency. Have a student read the problem out loud.
- Ask students what is the question being asked. (How many pieces of candy does Marta have left?)
- Ask students what operation is used to solve the problem. (division) Ask students to set up the division problem. Write the division problem on the transparency under problem #3.

$$9 \overline{)38}$$

- Ask students what the 38 represents. (38 pieces of candy) Ask students what the 9 represents. (9 friends)
- Work together to solve the problem. Write the computation on the transparency.

$$\begin{array}{r} 4 \text{ R } 2 \\ 9 \overline{)38} \\ - 36 \\ \hline 2 \end{array}$$

- Ask students what the 4 represents. (4 pieces of candy for each friend) Ask students what the 2 represents. (2 pieces of candy left over)
- Ask students again what is the question being asked. (How many pieces of candy does Marta have left?) Ask students what is the answer to the question. (2 pieces of candy) Write 2 pieces on the transparency. Point out to the students that in this problem the answer is the remainder.
- Display The Sweater Store transparency again and go over the 3 ways to interpret the quotient and the remainder at the bottom of the page.
- Distribute Quotients and Remainders. Have students complete the activity sheet.
- One Problem - Three Stories is included for further practice interpreting quotients and remainders.



The Sweater Store

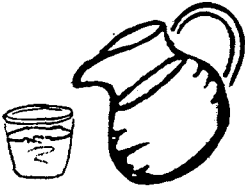
1. Ana works at The Sweater Store. She puts 27 sweaters on shelves. Each shelf holds 6 sweaters. On how many shelves will Ana put 6 sweaters?
2. Ana puts the rest of the sweaters on the display counter. How many sweaters does Ana put on the display counter?
3. **What if** Ana puts all the sweaters on shelves? How many shelves will she need?

There are three ways to interpret the quotient and the remainder to solve division problems.

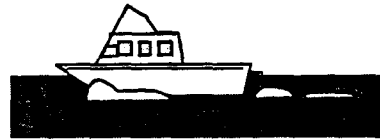
- The quotient answers the question like #1.
- The remainder answers the question like #2.
- A number that is one greater than the quotient answers the question like #3.

Division Practice

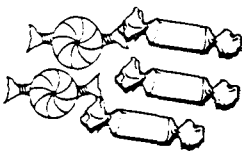
1. Each glass holds 8 ounces of juice. If there are 46 ounces of juice in the pitcher, how many 8 ounce glasses of juice can you pour?



2. The boat holds 25 people. How many trips will the boat have to make to carry 168 people across the river?




3. Marta has 38 pieces of candy. She gives an equal number to each of her 9 friends. How many pieces of candy does Marta have left?



Name _____


Quotients and Remainders

Solve each problem. Label each answer.

1. Angela has 45 beads. She makes bracelets with 8 beads on each bracelet.  How many bracelets does she make?

2. David is putting 39 eggs in cartons. Each carton holds 12 eggs. How many eggs will be in a carton that is not completely full?




3. A display window has 30 boxes of shoes.  There are 4 equal rows of closed boxes. The rest of the boxes are open. How many boxes are open?

4. Maria has 59 flowers. She puts 8 flowers in each vase and puts the vases on tables. How many tables have vases with 8 flowers?



5. If a bicycle rack holds 9 bicycles, how many racks are needed for 74 bicycles?



6. There are 10 stamps in each row on a sheet of stamps.  How many complete rows are there in a block of 87 stamps?



7. Sophie bakes 52 cookies. She puts the cookies in bags, 6 cookies to a bag. The full bags are placed in the freezer. Sophie eats the leftover cookies. How many cookies does Sophie eat?



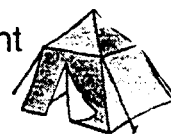
8. One hundred seventy-three eighth graders are going on a bus trip to New York City. Each bus holds 45 students. How many buses will be needed?



9. A total of 104 students want to play soccer. A soccer team has 11 players. How many teams can be made?



10. Eighty-six scouts are going on a camping trip. Each tent holds 8 scouts. How many tents are needed?



11. Mr. Simms gives students an oral test one student at a time. Each test takes 8 minutes. How many complete tests can he give in one hour?

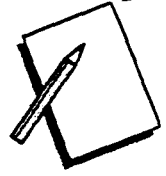


12. If 13 students are going to a football game in 3 cars, how many students will ride in each car?



Name _____

One Problem - Three Stories



Write three different word problems that use $4 \overline{)35} \begin{matrix} 8 \\ R 3 \end{matrix}$.

Problem #1 - **8** is the answer.

Problem # 2 - **3** is the answer.

Problem # 3 - **9** is the answer.

Answer Key
Mult. and Div. - Obj. 16

Interpreting Quotients and Remainders

- | | | | |
|----------------|--------------------|--------------|---|
| 1) 5 bracelets | 2) 3 eggs | 3) 2 boxes | 4) 7 tables |
| 5) 9 racks | 6) 8 complete rows | 7) 4 cookies | 8) 4 buses |
| 9) 9 teams | 10) 11 tents | 11) 7 tests | 12) 4 students in 2 cars, 5 students in 1 car |

One Problem - 3 Stories Word problems will vary.

Objective 17: Evaluate numerical expressions using order of operations.

Vocabulary

parentheses
exponents
alike
order of operations
evaluating

Language Foundation

1. Some students may be familiar with the word operation as something a doctor does to a patient. You could explain that just as a doctor has to do an operation in a certain order, math operations have to be carried out in a certain order as well.
2. Explain to students that the word order can have two meanings. We order food in a restaurant but we put/do things in order.

Transparencies:

Comparing Expressions
Order of Operations
Dear Aunt Sally
Evaluating Expressions

Student Copies:

Order of Operations
Dear Aunt Sally
Order Counts!
Practicing Order of Operations

Mathematics Component

1. Develop reason for order of operations.

- Display the transparency Comparing Expressions. Use a cover sheet so only the first column is showing.
- Tell students the first column of problems will be solved working from left to right. Work together to solve each problem, recording the answer on the transparency.
- Uncover the second column of problems. Tell students that these problems will be solved by doing the operation within the parentheses first. The remaining operations will be solved from left to right.
- Work together to solve each problem, recording the answers on the transparency.

1)	$50 - 10 \times 3$	120	$50 - (10 \times 3)$	20
2)	$2 + 8 \div 2$	5	$2 + (8 \div 2)$	6
3)	$3 + 5 \times 6$	48	$3 + (5 \times 6)$	33
4)	$6 + 2 \div 2$	4	$6 + (2 \div 2)$	7
5)	$4 + 3 \times 6 - 2$	40	$4 + (3 \times 6) - 2$	20

- Use a cover sheet so only the first row is showing. Ask students what is different about the 2 problems. (answers; parentheses in second problem) Ask students what is alike about the 2 problems. (same numbers, same order of numbers, same operations)
- Uncover one row at a time, asking students what is different and alike about each row of problems.
- Ask students what was done differently when solving each problem in column 2 that resulted in a different answer in column 1 for the same group of numbers and the same operations. (The operation in parentheses was done first in the problems in column 2.)
- Tell students that the **order** in which operations are done is important in math. Mathematicians have agreed on rules for the order of operations so that everyone solves problems in the same way. If students have difficulty with the word order, tell them that even in everyday life the order in which we do things can affect the result. There are often rules that help all people follow a certain order. For example, in the school cafeteria students must pick out the food and then pay for it. If a student tried to pay for the food first and then select the food, it would be very confusing. Order and rules are needed to keep things running smoothly.
- Display the transparency Order of Operations. Tell students this transparency explains the rules for order of operations. Go over the rules with students, emphasizing that multiplication/division and addition/subtraction are performed from left to right, regardless of which operation is first. Students may be given a copy of Order of Operations for further reference.
- Tell students a sentence is often used to help people recall the order of operations. Display the transparency Dear Aunt Sally. Go over with students. Students may be given a copy of Dear Aunt Sally for further reference.

2. Evaluate expressions using order of operations.

- Display the transparency Evaluating Expressions. Tell students that order of operations will be used to solve these problems. You might write PEMDAS and the words the letters stand for along the side of the transparency or have students use their copies of Dear Aunt Sally for assistance in remembering the order of operations.
- Direct students' attention to problem #1. Ask them which operation is performed first. (Division since it is the operation inside the parentheses.)
- Ask students the quotient of $8 \div 4$. (2) Write 2 on the transparency and bring down the 3.

$$\begin{array}{r} 3 + (8 \div 4) \\ \quad \swarrow \searrow \\ 3 + 2 \end{array}$$

- Ask students what the next operation is. (add 3 and 2) Ask students the sum of 3 and 2. (5) Write 5 on the transparency.

$$\begin{array}{r} 3 + (8 \div 4) \\ \quad \swarrow \searrow \\ 3 + 2 \\ \quad \swarrow \searrow \\ 5 \end{array}$$

- Work together to complete problems #2 - 8. Make sure you ask students which operation is performed next so the language and process can be practiced. Record the answers step by step as illustrated below.

2) $40 - 2 \times 10$

$$\begin{array}{r} 40 - 2 \times 10 \\ \quad \swarrow \searrow \\ 40 - 20 \\ \quad \swarrow \searrow \\ 20 \end{array}$$

3) $15 \div (4 + 1)$

$$\begin{array}{r} 15 \div (4 + 1) \\ \quad \swarrow \searrow \\ 15 \div 5 \\ \quad \swarrow \searrow \\ 3 \end{array}$$

4) $6 - 12 \div 6$

$$\begin{array}{r} 6 - 12 \div 6 \\ \quad \swarrow \searrow \\ 6 - 2 \\ \quad \swarrow \searrow \\ 4 \end{array}$$

5) $6 + 8 + 5^2$

$$\begin{array}{r} 6 + 8 + 5^2 \\ \quad \swarrow \searrow \quad \downarrow \\ 6 + 8 + 25 \\ \quad \swarrow \searrow \\ 14 + 25 \\ \quad \swarrow \searrow \\ 39 \end{array}$$

6) $(14 - 5) + (6 - 5) \times 7$

$$\begin{array}{r} (14 - 5) + (6 - 5) \times 7 \\ \quad \swarrow \searrow \quad \swarrow \searrow \\ 9 + 1 \times 7 \\ \quad \quad \swarrow \searrow \\ 9 + 7 \\ \quad \swarrow \searrow \\ 16 \end{array}$$

7) $12 + 11 \div 11 - 2$

$$\begin{array}{r} 12 + 11 \div 11 - 2 \\ \quad \swarrow \searrow \quad \quad \quad \\ 12 + 1 - 2 \\ \quad \swarrow \searrow \quad \quad \quad \\ 13 - 2 \\ \quad \swarrow \searrow \\ 11 \end{array}$$

8) $2^3 \times 4 \times (7 - 2)$

$$\begin{array}{r} 2^3 \times 4 \times (7 - 2) \\ \quad \downarrow \quad \swarrow \searrow \\ 8 \times 4 \times 5 \\ \quad \swarrow \searrow \quad \quad \quad \\ 32 \times 5 \\ \quad \swarrow \searrow \\ 160 \end{array}$$

- Distribute Order Counts! Go over the example with students. Have students complete the activity sheet.
- Practicing Order of Operations is included for further practice.

Comparing Expressions

Column 1

Column 2

1) $50 - 10 \times 3$

$50 - (10 \times 3)$

2) $2 + 8 \div 2$

$2 + (8 \div 2)$

3) $3 + 5 \times 6$

$3 + (5 \times 6)$

4) $6 + 2 \div 2$

$6 + (2 \div 2)$

5) $4 + 3 \times 6 - 5$

$4 + (3 \times 6) - 5$

Order of Operations

- 1) \longrightarrow Solve the parts that have **parentheses** around them.
()
- 2) \longrightarrow Find the value of any parts of the problem that has an **exponent**.
 3^2
- 3) \longrightarrow Do all the **multiplications** and **divisions** from left to right.
- 4) \longrightarrow Do all the **additions** and **subtractions** from left to right.

Example: $4 + (6 - 4) \times 3^2$ Parentheses

\downarrow

$4 + 2 \times 3^2$ Exponent

\downarrow

$4 + 2 \times 9$ Multiply/Divide

\downarrow

$4 + 18$ Add/Subtract

\downarrow

22

Dear Aunt Sally

The following sentence might help you remember the order of operations.

Please Excuse My Dear Aunt Sally.

- P** — parentheses
 - E** — exponents
 - M** — multiplications
 - D** — divisions
 - A** — additions
 - S** — subtractions
- > do either one from left to right
- > do either one from left to right

Evaluating Expressions

1) $3 + (8 \div 4)$

2) $40 - 2 \times 10$

3) $15 \div (4 + 1)$

4) $6 - 12 \div 6$

5) $6 + 8 + 5^2$

6) $(14 - 5) + (6 - 5) \times 7$

7) $12 + 11 \div 11 - 2$

8) $2^3 \times 4 \times (7 - 2)$

Name _____

Order Counts!



P — parentheses

E — exponents

M — multiplications

D — divisions

A — additions

S — subtractions

do either one from left to right

do either one from left to right

Tell which operation to perform first.

Add

Subtract

Multiply

Divide

Example

$25 - 2 \times 3$

multiply

1) $25 - 15 \div 3$ _____

2) $18 \div 6 \times 4$ _____

3) $7 + 9 - 5$ _____

4) $(14 + 2) \times 4$ _____

5) $12 - 2 \div 2 \times 5$ _____

6) $18 + 8 \times 2 - 3$ _____

7) $(15 - 5) \times (14 - 4)$ _____

8) $54 \div (3 \times 3)$ _____

Use **order of operations** to solve the following problems.

9) $(16 + 4) \times 2$
 \swarrow
 \searrow
 \times
 \swarrow
 \searrow

10) $24 \div 3 + 3$
 \swarrow
 \searrow
 $+$
 \swarrow
 \searrow

11) $38 - 7 + 5$

12) $63 \div 7 - 2 + 4$

13) $64 \div (12 - 4)$

14) $12 + 11 \div 11$

15) $6 \times 4 \div 8$

16) $(8 - 3) \times (16 - 8)$

17) $9 \div 3 + 7^2$

18) $6 + 4 - 1 \times 7$

19) $4^2 + (9 \times 8)$

20) $81 \div (7 - 4)$

21) $27 \div 3 + 7 - 6 \times 2$

22) $(44 + 6) \times 3 \div (8 - 3)$

23) Explain why **order** is **important** when solving problems with different operations. Show **examples** that illustrate your reasoning.

Name _____

Practicing Order of Operations

Use **order of operations** to solve the following problems.

1) $4 \times 8 + 6$

2) $14 + 12 \div 6$

3) $(18 + 4) \times 3$

4) $5^3 - 25 \times 3$

5) $(7-3) \times 3 \div 2$

6) $36 \div 9 \times 2^4$

7) $(14 - 8) \div 3 \times 3^3$

8) $35 - 5 \div 5 + 14$

9) $12 - 5 + 4 \times 2$

10) $(42 - 7) + (7 \times 7)$

11) $13 + 7 \times 3 - 5 + 18$

12) $8 \times 6 - (12 + 4) \div 2$

Answer Key
Mult. and Div. - Obj. 17

Order Counts

- | | | | |
|------------------------|-------------|-------------|-------------|
| 1) divide | 2) divide | 3) add | 4) add |
| 5) divide | 6) multiply | 7) subtract | 8) multiply |
| 9) 40 | 10) 11 | 11) 36 | 12) 11 |
| 13) 8 | 14) 13 | 15) 3 | 16) 40 |
| 17) 52 | 18) 3 | 19) 88 | 20) 27 |
| 21) 4 | 22) 30 | | |
| 23) Answers will vary. | | | |

Practicing Order of Operations

- | | | | |
|-------|--------|--------|--------|
| 1) 38 | 2) 16 | 3) 66 | 4) 50 |
| 5) 6 | 6) 64 | 7) 54 | 8) 48 |
| 9) 15 | 10) 84 | 11) 47 | 12) 40 |

Objective 18: Choose the operation to solve and create problems involving addition, subtraction, multiplication, and division of whole numbers.

Vocabulary

See list on p. 5.

Language Foundation

1. This lesson contains a list of words associated with the four operations. Additional time may be needed for the students to review and learn these words which provide an important foundation for pre-algebra and algebra.
2. Word problems traditionally give students a great deal of difficulty. Have students read the problem several times, if necessary. It may also be helpful to have them highlight or underline the key words. In some cases drawing a picture may also help the students solve the problem.

Materials

Transparencies:

Words Associated with Operations
Addition or Subtraction
Multiplication or Division
Word Problems

Student Copies:

Words Associated with Operations
Which Operation - Addition or Subtraction?
Which Operation - Multiplication or
Division?
Choosing the Operation
Mixed Practice
Four Operations - Four Problems

Mathematics Component

1. Identify key words.

- Tell students that word problems often contain key words that indicate which operation should be done to solve the problem. If students learn to recognize these key words, choosing the correct operation and solving the problem become easier.
- Display the transparency Words Associated with Operations. Go over the words under each operation, giving an example of how each word can be used in a problem. Tell students that not all the words that indicate specific operations are on this list; however, the most common key words are on the list. Remind students that phrases like “how many” and “how much” are often combined with the key words to indicate operations. For example, “How many apples are left?” or “How much more than Peter does Thomas weigh?”
- Direct students’ attention to the table titled *Meaning of Operations* at the bottom of the transparency. Tell students that in order to solve word problems, the meaning of what is asked must be considered since key words are not in every single word problem. Go over the table with students, explaining and giving examples.
- Give each student a copy of Words Associated with Operations. Tell them to use the information on this page as needed during the lesson.

2. Choose the correct operation - addition or subtraction.

- Display the transparency Addition or Subtraction. Tell students that these word problems are not going to be solved. Instead, the operation used to solve the problem will be determined.
- Have a student read the first problem out loud.
- Ask students if there is a key word in the problem that helps determine the correct operation. (less) Underline less on the transparency. Remind students to refer to Words Associated with Operations if necessary.
- Ask students the operation used to solve the problem. (subtraction) Write subtraction on the transparency under problem #1.
- Complete problems #2 - 4 in the same manner. Have a student read each problem out loud and underline the key words before choosing the correct operation.
- Answers are listed below for problems #2 - 4.

2) total addition

3) altogether addition

4) left subtraction

- Distribute Which Operation - Addition or Subtraction? to students. Do problem #1 together. Have students finish the activity sheet independently. Remind them to use Words Associated with Operations for reference.

3. Choose the correct operation - multiplication or division.

- Display the transparency Multiplication or Division. Remind students that multiplication is repeated addition so many key words for addition (in all, altogether, etc.) are used to indicate multiplication also. Multiplication always combines groups of equal size while addition combines groups of different sizes. (Since repeated addition problems such as $3 + 3$ can be written as a multiplication problem, 3×2 , try to get students to view addition as different-sized groups since equal-sized groups can always be multiplied.)
- Have a student read the first problem out loud.
- Ask students if there is a key word in the problem that helps determine the correct operation. (divided) Underline divided on the transparency.
- Ask students the operation used to solve the problem. (division) Write division on the transparency under problem #1.
- Complete problems #2 - 4 in the same manner. Have a student read each problem out loud and underline the key words before choosing the correct operation.
- Answers are listed below for problems #2 - 4.

2) altogether multiplication

3) equal groups division

4) twice multiplication

- Distribute Which Operation - Multiplication or Division? to students. Do problem #1 together. Have students finish the activity sheet independently. Remind them to use Words Associated with Operations for reference.

4. Choose the correct operation - addition, subtraction, multiplication, or division.

- Display the transparency Word Problems. Tell students that any of the four operations - addition, subtraction, multiplication or division- can be used to solve these problems.
- Have a student read the problem #1 out loud.
- Ask students if there are key words in the problem that helps determine the operation. (divided equally) Underline divided equally on the transparency.
- Ask students the operation used to solve the problem. (division) Write division under problem #1 on the transparency.
- Complete problems #2 - 4 in the same manner. Have a student read each problem out loud and underline the key words before choosing the correct operation.
- Answers are listed below for problems #2 - 4.

2) increased addition

3) total multiplication

4) difference subtraction

- Distribute Choosing the Operation. Go over the directions with students. Complete the first problem together. Remind students that key words are not always in word problems. The

meaning of what is being asked must be determined in order to choose the correct operation to solve the problem. Refer students to the table titled *Meaning of Operations* at the bottom of Words Associated with Operations. If necessary, review the table. Tell students to use the information, if needed, on Words Associated with Operations as they complete the activity page.

- Distribute Mixed Practice. Remind students that the problems on this activity sheet will use all four operations - addition, subtraction, multiplication and division. Have students complete the activity sheet independently.
- Four Operations-Four Problems is included for further practice in creating word problems.
- As an optional assignment to reinforce the relationships that give the operations their meaning, have students make posters about the meanings of operations. Posters should express the relationships of the operations and have illustrated examples.

Words Associated with Operations

+	-	x	÷
<u>Addition</u>	<u>Subtraction</u>	<u>Multiplication</u>	<u>Division</u>
add	subtract	multiply	divide
plus	minus	times	divided by
and	less	product	quotient
increased by	less than	as a factor	into equal groups
total	fewer than	twice	shared equally
in all	decreased by	double	over
sum	difference	triple	
altogether	from	groups of	
combined	how many more	of	
	take away		



Meaning of Operations

Operation	Meaning
Addition	Combine or join groups
Subtraction	Take away some of a group Compare one group to another group
Multiplication	Combine or join groups of equal size
Division	Separate into groups of equal size Find the number of groups

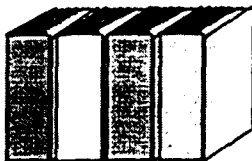
Addition or Subtraction

1. Alex weighs 145 pounds. His brother weighs 103 pounds. How much less than Alex does his brother weigh?



2. There are 13 girls  and 15 boys  in Ms. Yoon's class. What is the total number of students in her class?

3. Christine read 13 books in June, 9 books in July, and 15 books in August. How many books did she read altogether?



4. Mr. Williams has \$5.00. He gives \$1.75 to his daughter for an ice cream sundae. How much does he have left?



Name _____

Which Operation - Addition or Subtraction?

Circle the correct problem.

1. Miss Davenport brought 24 red crayons and 47 blue crayons to class. How many crayons did she bring altogether?



$$\begin{array}{r} 24 \\ + 47 \\ \hline 71 \text{ crayons} \end{array}$$

$$\begin{array}{r} 47 \\ - 24 \\ \hline 23 \text{ crayons} \end{array}$$

2. Lila sang for 36 minutes. Marion sang for 24 minutes. How much longer did Lila sing than Marion?



$$\begin{array}{r} 36 \\ + 24 \\ \hline 60 \text{ minutes} \end{array}$$

$$\begin{array}{r} 36 \\ - 24 \\ \hline 12 \text{ minutes} \end{array}$$

3. Mr. Rameriez drove 418 miles on Monday. He drove 396 miles on Tuesday. How many more miles did Mr. Rameriez drive on Monday?



$$\begin{array}{r} 418 \\ + 396 \\ \hline 814 \text{ miles} \end{array}$$

$$\begin{array}{r} 418 \\ - 396 \\ \hline 22 \text{ miles} \end{array}$$

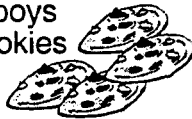
4. David saw 23 birds. Lana saw 11 birds. How many more birds did David see than Lana?



$$\begin{array}{r} 23 \\ + 11 \\ \hline 34 \text{ birds} \end{array}$$

$$\begin{array}{r} 23 \\ - 11 \\ \hline 12 \text{ birds} \end{array}$$

5. The girls baked 344 cookies. The boys baked 303 cookies. How many cookies did they bake in all?



$$\begin{array}{r} 344 \\ + 303 \\ \hline 647 \text{ cookies} \end{array}$$

$$\begin{array}{r} 344 \\ - 303 \\ \hline 41 \text{ cookies} \end{array}$$

6. Tommy weighs 126 pounds. Mark weighs 115 pounds. What is the total of their weights?



$$\begin{array}{r} 126 \\ + 115 \\ \hline 241 \text{ pounds} \end{array}$$

$$\begin{array}{r} 126 \\ - 115 \\ \hline 11 \text{ pounds} \end{array}$$

7. The baseball team plays 142 games during the year. If it loses 104 games, how many games does the team win?



$$+ \begin{array}{r} 142 \\ 104 \\ \hline 246 \end{array} \text{ games}$$

$$- \begin{array}{r} 142 \\ 104 \\ \hline 38 \end{array} \text{ games}$$

8. There are 75 students at the track meet. If 28 are girls, how many boys are at the track meet?



$$+ \begin{array}{r} 75 \\ 28 \\ \hline 103 \end{array} \text{ boys}$$

$$- \begin{array}{r} 75 \\ 28 \\ \hline 47 \end{array} \text{ boys}$$

9. Gwen does 62 sit-ups the first week and 34 sit-ups the second week. How many sit-ups does she do in two weeks?



$$+ \begin{array}{r} 62 \\ 34 \\ \hline 96 \end{array} \text{ sit-ups}$$

$$- \begin{array}{r} 62 \\ 34 \\ \hline 28 \end{array} \text{ sit-ups}$$

10. Andrea's class invites 56 parents to the class play. There are 19 parents who can't come. How many parents can come to the class play?



$$+ \begin{array}{r} 56 \\ 19 \\ \hline 75 \end{array} \text{ parents}$$

$$- \begin{array}{r} 56 \\ 19 \\ \hline 37 \end{array} \text{ parents}$$

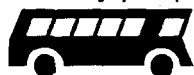
11. It takes 30 minutes for Ahmad to walk to school. Raoul walks to school in 25 minutes. How much longer does it take Ahmad to walk to school than Raoul?



$$+ \begin{array}{r} 30 \\ 25 \\ \hline 55 \end{array} \text{ minutes}$$

$$- \begin{array}{r} 30 \\ 25 \\ \hline 5 \end{array} \text{ minutes}$$

12. The Busy Bus Company drives 245 people to the Ice Show on Saturday and 234 people on Sunday. How many people go to the Ice Show by bus?

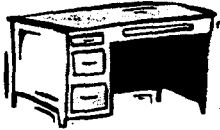


$$+ \begin{array}{r} 245 \\ 234 \\ \hline 479 \end{array} \text{ people}$$

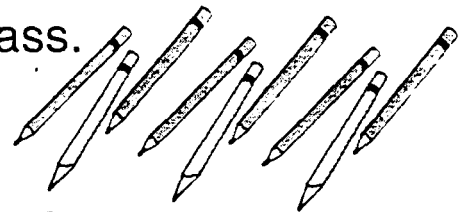
$$- \begin{array}{r} 245 \\ 234 \\ \hline 11 \end{array} \text{ people}$$

Multiplication or Division

1. Twenty-five desks are in the classroom. The desks are divided into groups of 5. How many groups of desks are there?



2. There are 26 students in the class. Each student has 9 pencils. How many pencils are in the class altogether?



3. The 220 students at Westpark Elementary School are placed into equal groups for field day activities. There are 22 groups. How many students are in each group?




4. Marta has 6 pairs of shoes. Her sister has twice as many shoes. How many pairs of shoes does her sister have?



Name _____

Which Operation - Multiplication or Division?

Circle the correct problem.

1. Linda had 48 flower seeds. 
She planted the same number of seeds
in 8 pots. How many seeds did she plant in
each pot?



$$\begin{array}{r} 48 \\ \times 8 \\ \hline 384 \text{ seeds} \end{array}$$

$$8 \overline{) 48} \text{ 6 seeds}$$

2. Music City Store has 168 new CDs.
They put an equal number of CDs on
8 shelves. How many tapes are
on each shelf?



$$\begin{array}{r} 168 \\ \times 8 \\ \hline 1,344 \text{ tapes} \end{array}$$

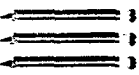
$$8 \overline{) 168} \text{ 21 tapes}$$

3. Mr. Jordan drove 55 miles each hour.
How many miles did he drive
in 5 hours?



$$\begin{array}{r} 55 \\ \times 5 \\ \hline 275 \text{ miles} \end{array}$$

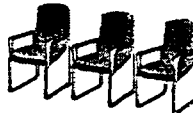
$$5 \overline{) 55} \text{ 11 miles}$$

4.  Ying bought 3 pencils.
Each pencil cost 27¢.
How much did Ying spend?

$$\begin{array}{r} 27\text{¢} \\ \times 3 \\ \hline 81\text{¢} \end{array}$$

$$3 \overline{) 27\text{¢}} \text{ 9¢}$$

5. Ms. Sanchez set up 24 rows of chairs for
the chorus concert. She put 12 chairs in
each row. How many chairs did
Ms. Sanchez set up?



$$\begin{array}{r} 24 \\ \times 12 \\ \hline 288 \text{ chairs} \end{array}$$

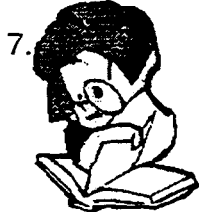
$$12 \overline{) 24} \text{ 2 chairs}$$

6. Sally's school has 440 students. There are
4 students in each activity group.
How many groups are there?



$$\begin{array}{r} 440 \\ \times 4 \\ \hline 1,760 \text{ groups} \end{array}$$

$$4 \overline{) 440} \text{ 110 groups}$$



7. Mary had a book with 84 pages. She read 14 pages each day. How many days did it take her to read the whole book?

$$\begin{array}{r} 84 \\ \times 14 \\ \hline 1,176 \text{ days} \end{array}$$

$$14 \overline{)84} \text{ 6 days}$$

8. Luis spent 30 minutes doing his math homework. He had 10 problems. If he spent the same amount of time on each problem, how long did he spend on each problem?



$$\begin{array}{r} 30 \\ \times 10 \\ \hline 300 \text{ minutes} \end{array}$$

$$10 \overline{)30} \text{ 3 minutes}$$

9. Mei made 3 pancakes for each person in her family. There are 6 people in her family. How many pancakes did she make?



$$\begin{array}{r} 3 \\ \times 6 \\ \hline 18 \text{ pancakes} \end{array}$$

$$3 \overline{)18} \text{ 6 pancakes}$$

10. A small bus holds 25 people. It has 5 seats. How many people can sit in each seat?



$$\begin{array}{r} 25 \\ \times 5 \\ \hline 125 \text{ people} \end{array}$$

$$5 \overline{)125} \text{ 25 people}$$

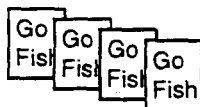
11. A bag of cookies has 98 cookies. Mrs. Martin buys 2 bags of cookies. How many cookies in all does Mrs. Martin buy?



$$\begin{array}{r} 98 \\ \times 2 \\ \hline 196 \text{ cookies} \end{array}$$

$$2 \overline{)196} \text{ 98 cookies}$$

12. Matt has 84 cards. He puts them in 6 equal rows. How many cards are in each row?

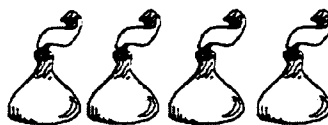


$$\begin{array}{r} 84 \\ \times 6 \\ \hline 504 \text{ cards} \end{array}$$

$$6 \overline{)504} \text{ 84 cards}$$

Word Problems

1. There are 64 pieces of candy to be divided equally among 8 children. How many pieces of candy will each child receive?



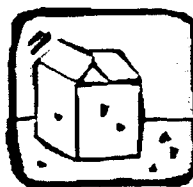
2. The temperature at 1 PM was 34°F . By 4 PM the temperature had increased by 15° . What was the temperature at 4 PM?



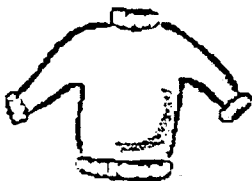
3. Soda costs \$12.85 a case.



Mr. Jones bought 12 cases for the sixth grade party. What was the total cost of the soda?



4. A cashmere sweater costs \$69.59. A cotton sweater costs \$37.98. What is the difference in the cost of the two sweaters?



Name _____

Choosing the Operation

Addition Subtraction Multiplication Division


Write the **operation** used to solve the following problems.

1. How many inches are in five feet?



2. How many more coins does your mother have than you?

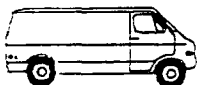


3.  If it takes you one hour to do your chores each day, how many hours do you spend doing chores in one month?

4. My eggs cost \$1.49 while my Mom's pancakes cost \$2.99. My milk cost 50¢ and her coffee cost 60¢. What is the cost of our meal?



5. How many vans does your class need if a dozen students can fit into one van?



6. A local restaurant  opened in 1924. How long has it been in business?

7. If it takes you one hour to walk five miles, how many miles will you walk in $3\frac{1}{2}$ hours?



8. A piece of gum costs 5¢. I buy 27 pieces of gum.



How much do I pay?

9. If it takes about 8 apples to make a pie, how many pies can you make with 100 apples?



Name _____

Mixed Practice

Solve each problem. Be sure to label your answer.

1. Sundas has six quarters in her purse plus the eight quarters she found in her pocket.



How many quarters does Sundas have?

2. There are 192 apartment buildings divided evenly among 16 city streets. How many apartment buildings are on each street?



3. John drove 562 miles. Joseph drove 373 miles. How much farther did John drive?



4. There are 24 picnic tables. Each table seats 8 people. How many people can sit at the picnic tables?



5. On Monday night, Luis counted 248 stars. On Tuesday night he counted 307 stars. He counted 419 stars on Wednesday night. How many stars did Luis count on all three nights?



6. The librarian is packing books in boxes so the books can be moved to the new library. If 8 books fit in each box and there are 460 books, how many boxes will be needed to move all the books?



7. Juanita picked 132 apples. She wants to give each of her four friends an equal amount of apples. How many apples will each friend get?



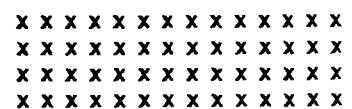
8. Moises has 187 stamps. He gives 48 stamps to his cousin Juan. How many stamps does Moises have left?



9. There are 6 teams in the seventh grade at Crossroads Middle School. Each team has 147 students. How many students are there in the seventh grade?



10. There are 910 seats in the theater. Each row has 14 seats. How many rows are there?



11. Judith's class sold 825 tickets to the school play. Each of the 25 students sold the same number of tickets. How many tickets did each student sell?



12. There are 18 donuts in each bag. How many donuts are in 32 bags?



Name _____

Four Operations - Four Problems

Write **one addition** and **one subtraction** word problem using the numbers **14 8 22**.
Include the number sentence (addition or subtraction) that solves each word problem.

1.

2.

Write **one multiplication** and **one division** word problem using the numbers **12 4 48**.
Include the number sentence (multiplication or division) that solves each word problem.

3.

4.

Answer Key **Mult. and Div. - Obj. 18**

Which Operation - Addition or Subtraction?

- | | | | |
|--|---|---|--|
| 1) $\begin{array}{r} 24 \\ + 47 \\ \hline \end{array}$ 71 crayons | 2) $\begin{array}{r} 36 \\ - 24 \\ \hline \end{array}$ 12 minutes | 3) $\begin{array}{r} 418 \\ - 396 \\ \hline \end{array}$ 22 miles | 4) $\begin{array}{r} 23 \\ - 11 \\ \hline \end{array}$ 12 birds |
| 5) $\begin{array}{r} 344 \\ + 303 \\ \hline \end{array}$ 647 cookies | 6) $\begin{array}{r} 126 \\ + 115 \\ \hline \end{array}$ 241 pounds | 7) $\begin{array}{r} 142 \\ - 104 \\ \hline \end{array}$ 38 games | 8) $\begin{array}{r} 75 \\ - 28 \\ \hline \end{array}$ 47 boys |
| 9) $\begin{array}{r} 62 \\ + 34 \\ \hline \end{array}$ 96 sit-ups | 10) $\begin{array}{r} 56 \\ - 19 \\ \hline \end{array}$ 37 parents | 11) $\begin{array}{r} 30 \\ - 25 \\ \hline \end{array}$ 5 minutes | 12) $\begin{array}{r} 245 \\ + 234 \\ \hline \end{array}$ 479 people |

Which Operation - Multiplication or Division?

- | | | | |
|--|--|---|---|
| 1) $\begin{array}{r} 6 \text{ seeds} \\ 8 \overline{) 48} \end{array}$ | 2) $\begin{array}{r} 21 \text{ tapes} \\ 8 \overline{) 168} \end{array}$ | 3) $\begin{array}{r} 55 \\ \times 5 \\ \hline \end{array}$ 275 miles | 4) $\begin{array}{r} 27c \\ \times 3 \\ \hline \end{array}$ 81c |
| 5) $\begin{array}{r} 24 \\ \times 12 \\ \hline \end{array}$ 288 chairs | 6) $\begin{array}{r} 110 \text{ groups} \\ 4 \overline{) 440} \end{array}$ | 7) $\begin{array}{r} 6 \text{ days} \\ 14 \overline{) 84} \end{array}$ | 8) $\begin{array}{r} 3 \text{ minutes} \\ 10 \overline{) 30} \end{array}$ |
| 9) $\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$ 18 pancakes | 10) $\begin{array}{r} 5 \text{ people} \\ 5 \overline{) 25} \end{array}$ | 11) $\begin{array}{r} 98 \\ \times 2 \\ \hline \end{array}$ 196 cookies | 12) $\begin{array}{r} 14 \text{ cards} \\ 6 \overline{) 84} \end{array}$ |

Choosing the Operation

- | | | |
|-------------------|-------------------|-------------------|
| 1) multiplication | 2) subtraction | 3) multiplication |
| 4) addition | 5) division | 6) subtraction |
| 7) multiplication | 8) multiplication | 9) division |

Mixed Practice

- | | | |
|----------------|-----------------|-----------------|
| 1) 14 quarters | 2) 12 buildings | 3) 189 miles |
| 4) 192 people | 5) 974 stars | 6) 58 boxes |
| 7) 33 apples | 8) 139 stamps | 9) 882 students |
| 10) 65 rows | 11) 33 tickets | 12) 576 donuts |

Four Operations - Four Problems - Word problems will vary.

